Utilities Appendices

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Utilities Appendices

Appendix A

Inventory of City Utilities, Capacity Information and Future Facility Needs

Seattle City Light

Seattle City Light (SCL) is the City-owned electric utility serving approximately 131 square miles, including all of Seattle and some portions of King County north and south of the City limits.

Inventory:

SCL generates 70% of the energy that it sells to retail customers from its own facilities. The largest facilities are the Skagit Project, which includes three dams on the Skagit River, and Boundary Dam on the Pend Oreille River in northeast Washington. The Cedar Falls Dam on the Cedar River and the South Fork Tolt Dam on the South Fork Tolt River are smaller generating facilities. City Light also holds an 8% interest in the Centralia coal-fired generating plant in southwest Washington. In addition to these power sources, SCL purchases power from the Bonneville Power Administration (BPA) and holds firm power purchase contracts with a number of other suppliers in the Pacific Northwest.

SCL owns and maintains approximately 657 miles of transmission lines which carry power from the Skagit and Cedar Falls generating facilities to 14 principal substations. Power is distributed from these principal substations via high voltage feeder lines to numerous smaller distribution substations and pole transformers which reduce voltage to required levels for customers. SCL owns and maintains 2,428 circuit-miles of distribution lines within Seattle that deliver power from the 14 principal substations to 341,063 customers. (See Utilities Figures A-1 and A-2).

Existing Capacity

SCL's current generation capability (owned and contracted) is adequate to serve existing customers. Because of the nature of City Light's hydro system, the utility is not presently constrained by its ability to meet peak loads (typically referred to as capacity), but rather by its ability to carry load over the 15 heavy load hours during the winter (7 a.m. to 10 p.m.) Even though there is sufficient generation capability to serve the peak load, the utility sometimes purchases energy on the spot market to meet its heavy load hour requirements.

Anticipated Future Facilities:

SCL currently uses 100 percent of its firm (or guaranteed) owned and contracted generation capability to meet its own load, with Bonneville Power Administration (BPA) making up the balance. Under its current contract with BPA, which extends until 2001, Seattle is obligated to cover its own load growth.

For the transmission and distribution components of SCL's system, projected growth will be accommodated by planned transmission and distribution capacity additions. The addition of a transformer at the Bothell Substation in Snohomish County will serve the principal substations from the Snohomish County line to the Lake Washington Ship Canal. Within the Comprehensive Plan's 20-year timeframe a new principal substation will be necessary downtown, with an underground transmission line connection to the South substation. Capacity would also be expanded at the North, Duwamish, Shoreline, and Creston substations (Figure A-1).

Seattle Public Utilities (Water Utility)

The Seattle Public Utilities (SPU) provides water service to customers of Seattle and portions of King County. In addition, PU sells wholesale water to more than two dozen suburban water districts, municipalities, and nonprofit water associations ("purveyors") which serve retail water customers in most of the urban areas in north, east, and south King County, and a small part of southwest Snohomish county. (See Utilities Figures A-4). SPU operates under an Operator's Certificate granted by the State Department of Health.

Inventory:

SPU supplies drinking water from two major water supply sources--the Cedar River Watershed, the South Fork of the Tolt River Watershed, and a small amount of water from the Highline Well Field. The Cedar River and South Fork of the Tolt River Watersheds are in the Cascade Mountains, while the Highline Well Field is located north of Seattle-Tacoma International Airport. Transmission pipelines carry the water to various reservoirs, standpipes, and tanks for further distribution. (See Utilities Figure A-4)

Existing Capacity:

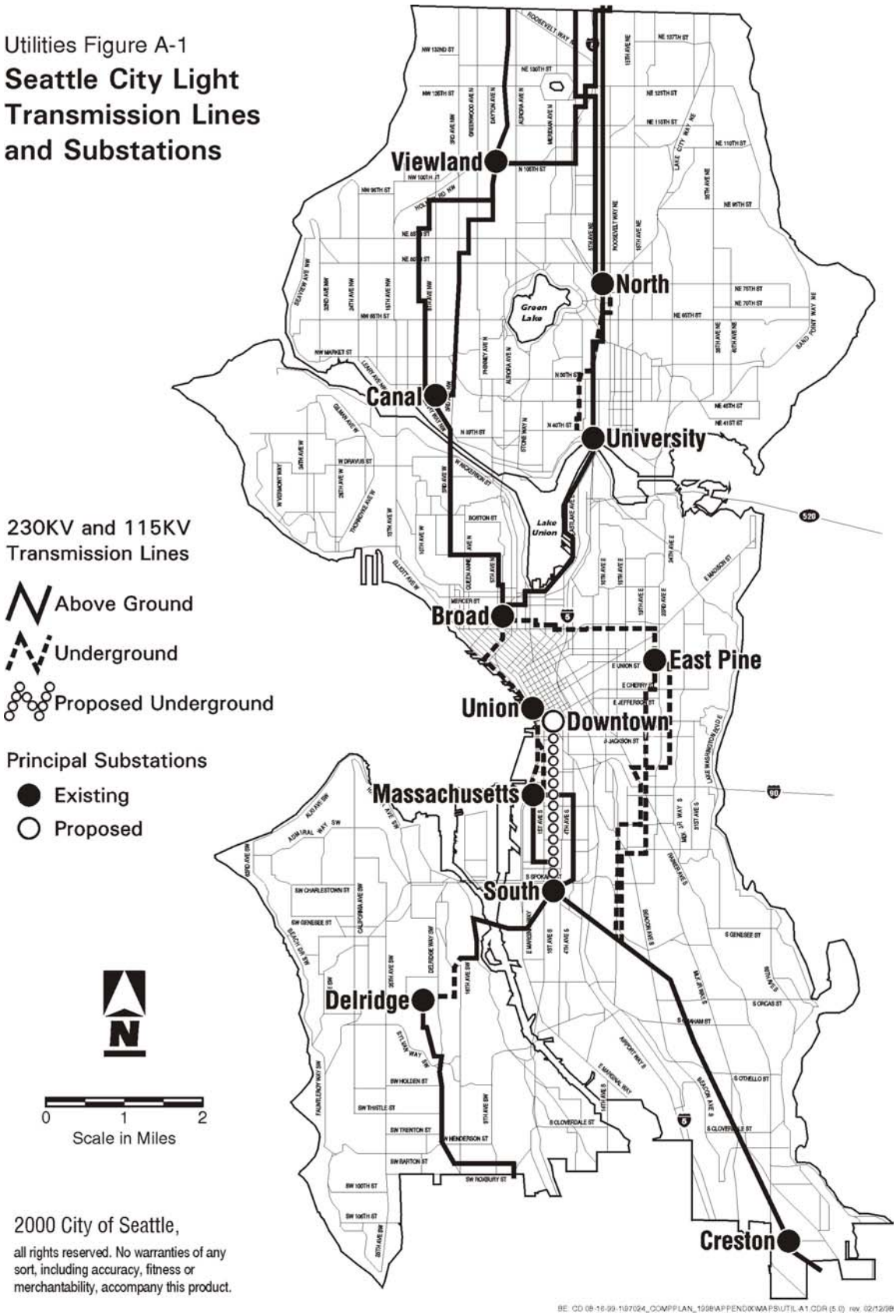
The SPU service area extends beyond the City's boundaries, making it impossible to allocate capacity figures to the supply sources and transmission lines solely for in-city service. The snowpack level and temperature in the watershed areas are important natural factors that determine when and how much runoff will fill the reservoirs. Affecting SPU's water supply is the environmental impact of the dams on the stream flows. Business, environmental, agricultural, recreational, tribal, and fisheries groups all have interests in the level of water in the streams. The City, however, under normal circumstances, expects water supply to be adequate to serve the City's existing and forecast population for at least the next six years.

Distribution and storage facilities that serve Seattle residents are located within and beyond the city limits. These facilities have adequate capacity to serve the city; however, some areas have substandard mains or experience low water pressure.

Low pressure areas include Maple Leaf (Maple Leaf Tank), Phinney Ridge (Woodland Park Standpipe), and Queen Anne Hill (Queen Anne Standpipe). These areas are all located near standpipe or/tanks and, therefore, receive water at or below the current design standard of 30 pounds per square inch (psi). New pump station construction for Queen Anne and Phinney Ridge is included in SPU's current six-year CIP.

Utilities Figure A-1

Seattle City Light Transmission Lines and Substations



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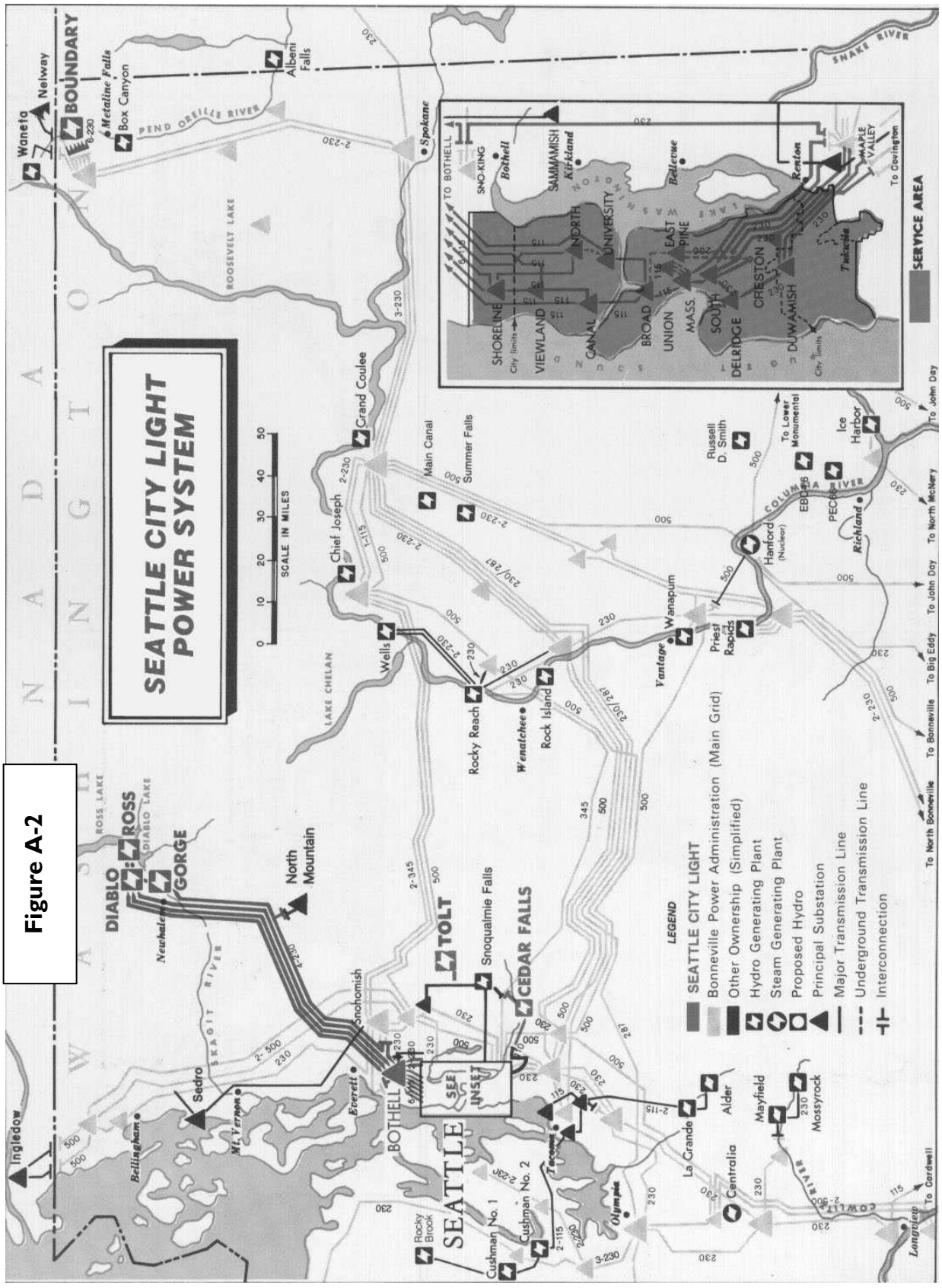

SEATTLE CITY LIGHT POWER SYSTEM
SCALE IN MILES
0 10 20 30 40 50
SERVICE AREA
LEGEND
SEATTLE CITY LIGHT
Bonneville Power Administration (Main Grid)
Other Ownership (Simplified)
Hydro Generating Plant
Steam Generating Plant
Proposed Hydro
Principal Substation
Major Transmission Line
Underground Transmission Line
Interconnection
BOUNDARY
Metaline Falls
Box Canyon
Albeni Falls
Waneta
Nelway
PEND OREILLE RIVER
SNAKE RIVER
ROOSEVELT LAKE
Spokane
Grand Coulee
Chief Joseph
Main Canal
Summer Falls
Wells
LAKE CHELAN
Rocky Reach
Wenatchee
Rock Island
Vantage
Wanapum
Priest Rapids
Hanford (Nuclear)
Russell D. Smith
To Lower Monumental
Ice Harbor
To John Day
To North McNary
To Big Eddy
To Bonneville
To North Bonneville
COLUMBIA RIVER
EBEY
PECK
Richland
DIABLO
ROSS
GORGE
ROSS LAKE
DIABLO LAKE
Newhalem
North Mountain
SKAGIT RIVER
Sedro
Bellingham
Mt. Vernon
Everett
Snohomish
TOLT
Snoqualmie Falls
CEDAR FALLS
SEE INSET
BOTHELL
SEATTLE
Rocky Brook
Cushman No. 1
Cushman No. 2
Tacoma
Olympia
La Grande
Alder
Centralia
Mayfield
Mossyrock
COWLITZ RIVER
To Cardwell
Longview
Ingledow
TO BOTHELL
SNO-KING
Bothell
SAMMAMISH
Kirkland
Bellevue
Renton
MAPLE VALLEY
To Covington
SHORELINE
City limits
VIEWLAND
CANAL
NORTH
UNIVERSITY
EAST
PINE
BROAD
UNION
MASS.
SOUTH
DELRIDGE
CRESTON
DUWAMISH
Tukwila
LAKE WASHINGTON
SOUND

Figure A-2

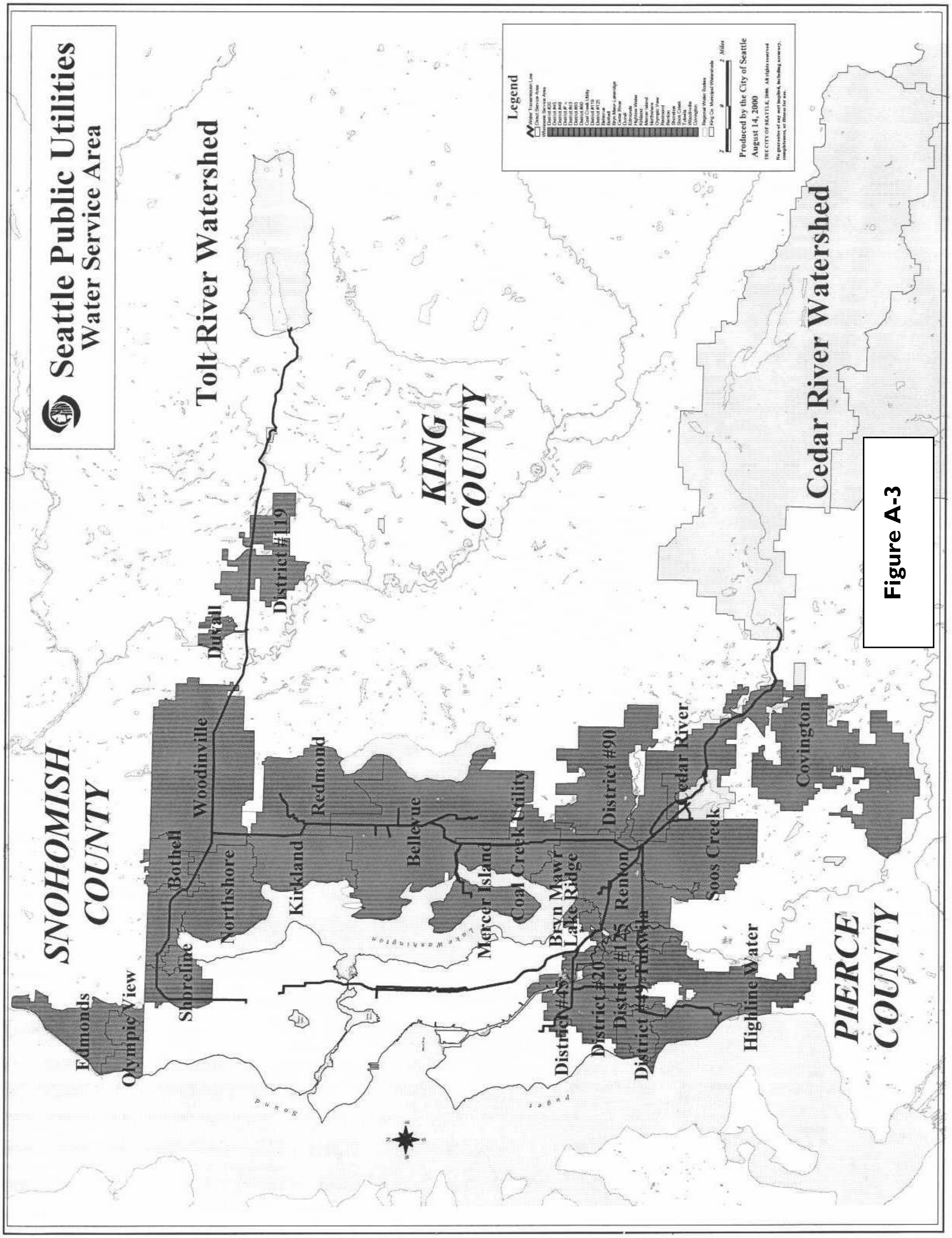
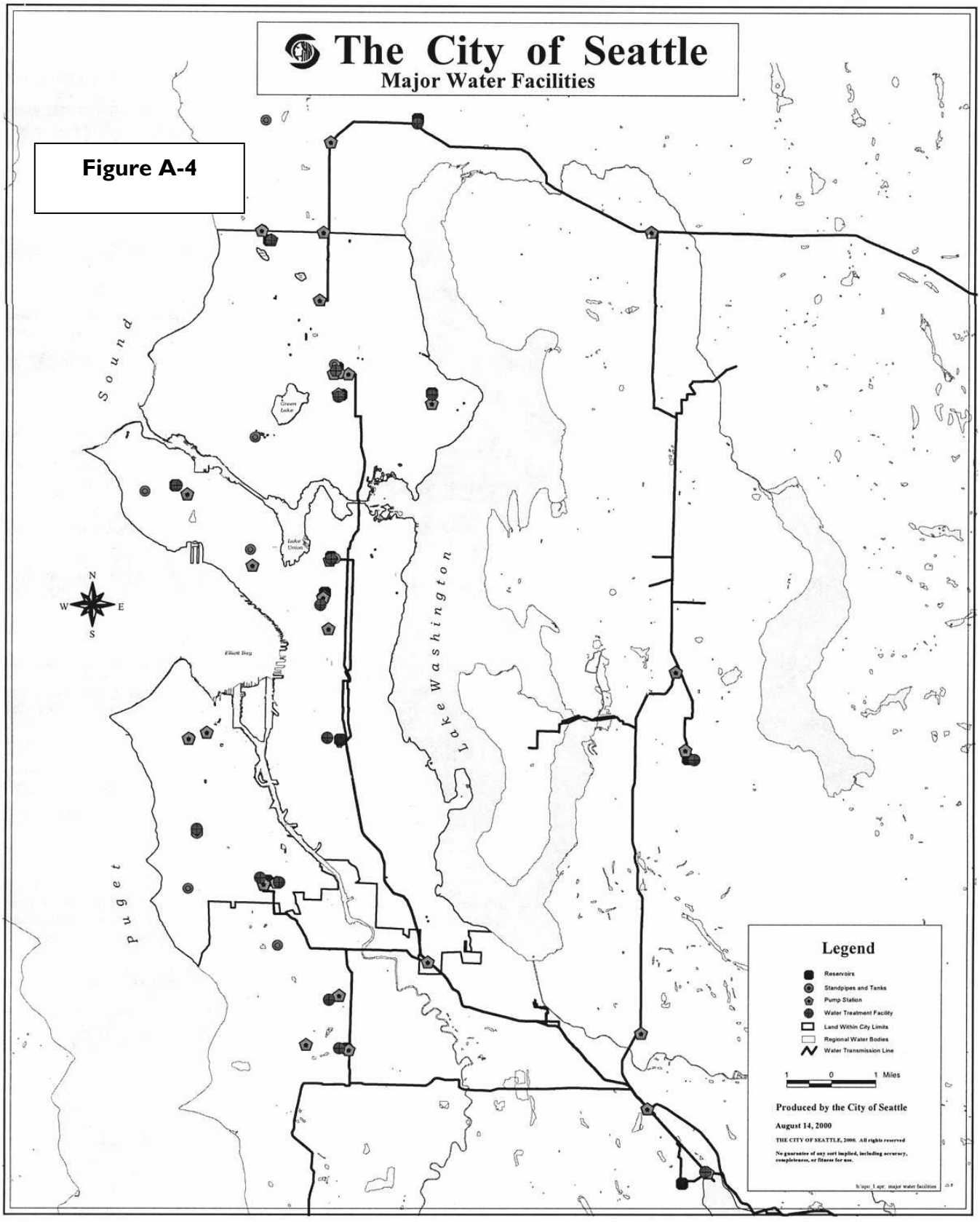

Seattle Public Utilities
Water Service Area
Tolt River Watershed
KING COUNTY
SNOHOMISH COUNTY
Cedar River Watershed
PIERCE COUNTY
Legend
Produced by the City of Seattle
August 14, 2000
Edmonds
Olympic View
Shoreline
Bothell
Woodinville
Northshore
Kirkland
Redmond
Bellevue
Mercer Island
Coal Creek Utility
Bryn Mawr
Lake Ridge
Renton
District #90
Cedar River
Soos Creek
Covington
Highline Water
Duvall
District #119
Lake Washington

Figure A-3

Figure A-4


The City of Seattle
Major Water Facilities
Puget Sound
Lake Washington
Green Lake
Lake Union
Elliott Bay
N
W
E
S
Legend
Reservoirs
Standpipes and Tanks
Pump Station
Water Treatment Facility
Land Within City Limits
Regional Water Bodies
Water Transmission Line
1 0 1 Miles
Produced by the City of Seattle
August 14, 2000
THE CITY OF SEATTLE, 2000. All rights reserved
No guarantee of any sort implied, including accuracy, completeness, or fitness for use.

Substandard mains in need of replacement have been identified and prioritized. The replacement schedule is included in the SPU'S six-year CIP. Potential substandard fire protection is a concern in various areas throughout the City, resulting from changes in standards that increase fire demand. Deficiencies include aging pipes and inadequate pipe diameter. These improvements are also incorporated in the department's six-year CIP.

Anticipated Future Facilities:

A new water supply source is likely to come on-line within the next ten years. Within the city, most of the new households that will be added will be in multifamily units, which have a much lower per capita water demand than single family households.

The major impact of the growth envisioned by the Comprehensive Plan on the City's Water facilities will be in the distribution system. Rehabilitation and improvements to the existing distribution system will be needed to support growth over the twenty year life of the Plan. Improvements to increase volumes in distribution facilities in the Urban Centers over the next six years are included in the department's current CIP.

Seattle Public Utilities (Drainage and Wastewater)

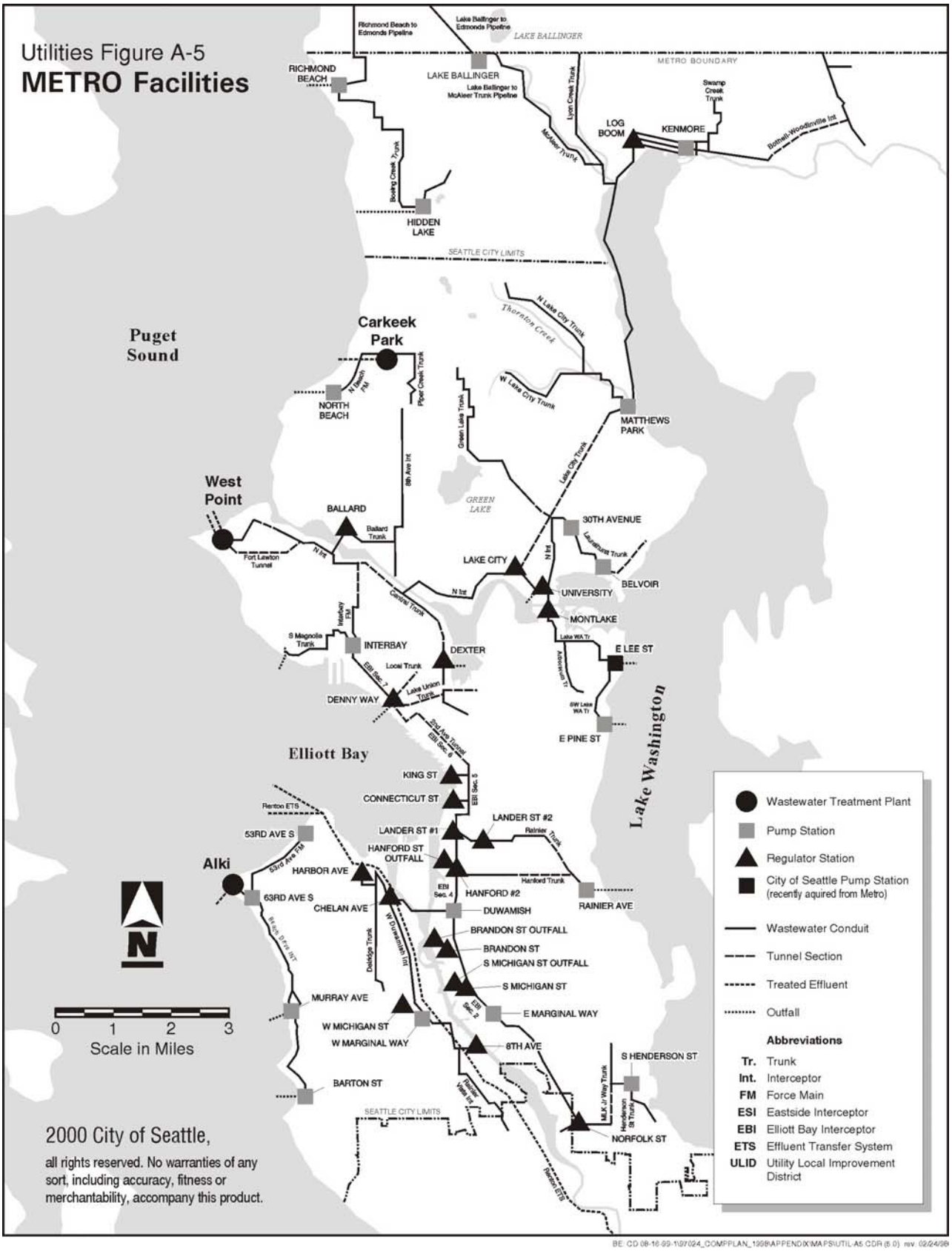
SPU is charged with managing drainage, surface runoff, and sewer systems to meet public safety, water quality, and resource protection goals. SPU's service area covers the City of Seattle. Additionally, -SPU provides sewer service to some areas north of the city limits, though SPU is in the process of negotiating the transfer of part of its sewer system to the Shoreline Sewer District.

Inventory:

Although a few small areas are still served by septic systems, almost all areas of the city are served by sanitary sewers. Three types of drainage and waste water systems are used in Seattle: combined sanitary/storm water sewer, partially separated sanitary/storm water sewer, and separate sanitary and storm water sewer systems. The SPU system collects residential, commercial, and industrial waste water and delivers it to interceptor lines operated by the regional sewage treatment agency (King County). The sewage is then treated at the West Point Sewage Treatment Plant before being discharged into Puget Sound. Two other plants, Alki and Carkeek, have been converted to treat wet weather flows only. (See Utilities Figure A-5).

Existing Capacity:

City Drainage and Wastewater System: The capacity of the wastewater system in some areas is limited when peak stormwater flows enter the combined systems. During or following intense or prolonged periods of rainfall some of the systems cannot accommodate the combined runoff and sanitary sewage flows, resulting in combined sewer overflows (CSO's) being discharged into area waters. CSO's occur in both the regional and the City systems. Seattle's CSO Control Plan, adopted in 1988, addresses specific storage and separation projects to control CSO's and describes costs and schedules in a twenty-year timeframe. SPU has already completed improvements to 69 of the 83 CSO locations and by the year 2006, Seattle will have reduced CSO volumes by at least 79 percent. Funding for these improvements is included in the Department's six-year CIP. SPU will also update its CSO plan by 2001.


Utilities Figure A-5
METRO Facilities
Richmond Beach to Edmonds Pipeline
Lake Ballinger to Edmonds Pipeline
LAKE BALLINGER
METRO BOUNDARY
RICHMOND BEACH
LAKE BALLINGER
Lake Ballinger to McAleer Trunk Pipeline
Lyon Creek Trunk
Swamp Creek Trunk
LOG BOOM
KENMORE
Bothell-Woodinville Int
McAleer Trunk
Boeing Creek Trunk
HIDDEN LAKE
SEATTLE CITY LIMITS
Thornton Creek
N Lake City Trunk
Puget Sound
Carkeek Park
NORTH BEACH
N Beach FM
Piper Creek Trunk
W Lake City Trunk
MATTHEWS PARK
Green Lake Trunk
Lake City Trunk
8th Ave Int
West Point
GREEN LAKE
BALLARD
Ballard Trunk
30TH AVENUE
Laurelhurst Trunk
Fort Lawton Tunnel
N Int
LAKE CITY
BELVOIR
UNIVERSITY
Central Trunk
Interbay FM
MONTLAKE
S Magnolia Trunk
INTERBAY
DEXTER
Lake WA Tr
E LEE ST
Arboretum Tr
Local Trunk
EBI Sec. 7
Lake Union Trunk
DENNY WAY
SW Lake WA Tr
E PINE ST
Lake Washington
3rd Ave Tunnel
EBI Sec. 6
Elliott Bay
KING ST
EBI Sec. 5
CONNECTICUT ST
Renton ETS
LANDER ST #2
Rainier Trunk
53RD AVE S
LANDER ST #1
HANFORD ST OUTFALL
53rd Ave FM
Alki
HARBOR AVE
Hanford Trunk
EBI Sec. 4
HANFORD #2
RAINIER AVE
63RD AVE S
CHELAN AVE
DUWAMISH
Delridge Trunk
W Duwamish Int
BRANDON ST OUTFALL
BRANDON ST
S MICHIGAN ST OUTFALL
S MICHIGAN ST
EBI Sec. 2
E MARGINAL WAY
MURRAY AVE
W MICHIGAN ST
W MARGINAL WAY
8TH AVE
S HENDERSON ST
BARTON ST
Renton Valley Int
MLK Jr Way Trunk
Henderson St Trunk
SEATTLE CITY LIMITS
NORFOLK ST
Renton ETS
0 1 2 3
Scale in Miles
Wastewater Treatment Plant
Pump Station
Regulator Station
City of Seattle Pump Station (recently aquired from Metro)
Wastewater Conduit
Tunnel Section
Treated Effluent
Outfall
Abbreviations
Tr. Trunk
Int. Interceptor
FM Force Main
ESI Eastside Interceptor
EBI Elliott Bay Interceptor
ETS Effluent Transfer System
ULID Utility Local Improvement District
2000 City of Seattle,
all rights reserved. No warranties of any sort, including accuracy, fitness or merchantability, accompany this product.

Regional Wastewater Treatment System:

The West Point Treatment Plant is secondary treatment operation, with a capacity of 133 million gallons per day (MGD), monthly average flow. It is designed to handle a peak flow capacity of 440 MGD, with 300 MGD receiving secondary treatment and the remainder primary treatment.

The West Point Treatment Plant serves 1.3 million people including residents of Seattle, King County north of Seattle, and South Snohomish County.

Anticipated Future Facilities:

City Facilities: Generally, the drainage and wastewater facilities in Seattle have been planned and sized to serve the maximum or build-out conditions under existing zoning and will be adequate to serve the level of increased growth proposed in the Plan. The capacity of the wastewater system is limited only in specific areas of the city, where there have been historic hydraulic and system backup problems. These problems are being addressed by SPU programs in the Department's CIP.

Regional Facilities: Under King County's Regional Wastewater Services Plan, a third treatment plant is planned to be added in South Snohomish or North King County by about 2010 to handle the region's growth.

Seattle Public Utilities (Solid Waste)

SPU contracts with private firms for the collection of residential garbage, recyclables, and yard waste within the city. Collection of commercial solid waste is currently handled by private carriers and facilities. SPU is negotiating contracts for commercial garbage collection which are expected to be finalized in 2001. SPU provides for disposal of all garbage generated in the city through a long-term contract wit Waste Management Systems at their Arlington, Oregon landfill.

Inventory:

The solid waste transfer system consists of four transfer stations. The two City-owned transfer stations receive residential solid waste, while the two privately-owned transfer stations receive both in-city commercial solid waste and solid waste from outside Seattle. Garbage is compacted into containers which are trucked to the Argo Intermodal Facility; from there, the containers are loaded onto trains for long-haul transport to a landfill owned and operated by Oregon Waste Systems in Gilliam County, Oregon. Most recyclable materials are handled by two privately-owned facilities. Household hazardous wastes can be brought to one of two facilities operated by SWU. (See Utilities Figure A-6).

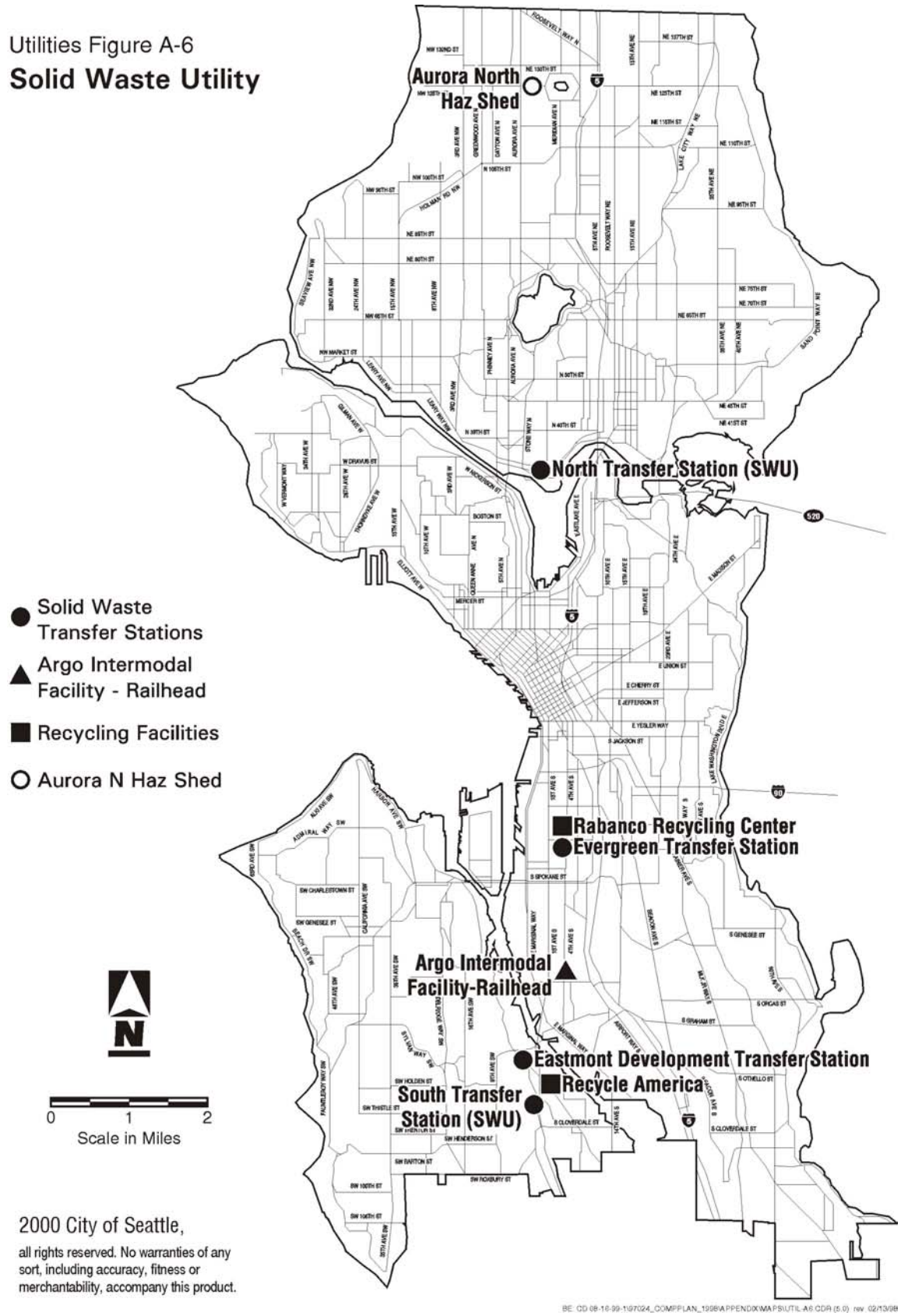
Existing Capacity:

1. *Solid Waste Collection and Transfer Facility Capacity:*

   SPU's North and South Recycling and Disposal Stations (RDS) were designed in the 1960's for the transfer of garbage, not for today's solid waste management strategy involving separation of recyclable materials. They were designed to handle 1,000 tons of garbage per day (or 365,000 tons per year). In 1999, Approximately 250,000 tons of garbage were disposed of through the City's two RDS as well as over 40,000 tons of yard waste, 2,300 tons of woodwaste, 1,000 tons of metal appliances and over 30,000 tons of other recyclables.

Utilities Figure A-6

Solid Waste Utility



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With the new residential garbage contracts, more residential garbage will be directed to SRDS, and depending on the outcome of the commercial contract negotiations, there may be new commercial garbage tons going through both RDS. SPU is currently evaluating options for increasing the capacity to handle future self-haul and contractor trips and tons at the RDS.

Commercial garbage generated in the City is delivered to the two private transfer stations. These two facilities handle garbage (as well as construction and demolition debris (CDL)) from both inside and outside Seattle. In 1988, these facilities handled approximately 198,200 tons of garbage from Seattle businesses, and another 80,000 of CDL from in-City construction activity. In 1999 the two private stations handle 225,000 tons of garbage from the City of Seattle. In recent years, Waste Management has also built a new station for separated construction debris. The two private transfer facilities have the capability to handle 300,000-400,000 tons of waste per year including waste from Seattle's businesses. One of these facilities is located in the South Park area near the City's South Recycling and Disposal Station, the other is south of downtown on Lander.

2. *Recycling Processing Facilities:*

Two private "material recovery facilities" (MRFs) serve as the processing and transfer facilities for most of the recyclable materials collected from in-City residents and businesses. These facilities, Recycle Seattle and Recycle America, process and transfer a large proportion of the 350,000 tons of residential and commercial recyclable material that was collected through the City's solid waste system in 1994. One of these facilities is located in the South Park area, near the City's South Recycling and Disposal Station, and the other is south of downtown on Lander.

3. *Disposal Facilities:*

Waste is compacted at the transfer stations into containers that are trucked directly to the Argo rail yard for long-haul to the landfill in Oregon. Presently, approximately 60 containers per day (each holding 25-28 tons), five days a week, are trucked to the railhead. The train to the landfill operates 3 times per week, with about 100 containers per trip. Seattle and Washington Waste Systems (WWS) have a contract extending through March 31, 2028, and the terms of the contract are more than adequate to handle the additional waste volumes generated by projected growth.

Anticipated Future Facilities:

The region's landfill capacity is large enough to last for at least the next 40-80 years. Private transfer stations have the capacity to handle projected garbage tonnages, but SPU transfer facilities will need modifications if they are to adequately handle projected contractor and self-haul trips and to effectively contribute to the City's waste reduction and recycling goals. Although the overall amount of waste generated in the city will increase with projected residential and employment growth, the percentage of waste that will need to be hauled to Oregon is expected to decrease due to higher anticipated rates of recycling. Seattle

has adopted the goal of recycling 60 percent of its overall waste by 2008.

Residential waste is anticipated to comprise a decreasing share of the future combined waste stream. Commercial waste is projected to comprise a larger share of Seattle's waste stream in the future. Increased commercial sector waste disposal needs and an increased demand for recycling contractor services will be handled by private contractors and facilities. Representatives from both private transfer stations have indicated that the increased amount of waste can be handled within the existing facilities.

The two private materials processing facilities will handle a major share of the increase in volumes of recyclable material that will occur with projected growth. These businesses are dealing with services and markets at a regional level, so the specific impacts of increased Seattle tonnage are difficult to predict.

Appendix B

Description and Inventory of Investor-owned Utilities Serving Seattle

Washington Natural Gas

Washington Natural Gas Company (WNG) is an investor-owned natural gas utility serving more than 400,000 customers in five Western Washington counties--Snohomish, King, Pierce, Thurston, and Lewis. WNG is the largest of five subsidiaries that comprise Washington Energy Company. WNG's distribution of natural gas involves system pressure regulation and the development and maintenance of a network of gas mains to serve the utility's customers.

WNG is supplied by Northwest Pipeline Corporation, a natural gas wholesaler with interstate pipeline facilities extending from Canada to New Mexico. Two underground transmission lines branch off from the pipeline to serve the 108,942 customers in the Seattle area via 1,345 miles of underground gas mains. (See Utilities Figure A-7).

US WEST Communications

US WEST Communications (US WEST) is the telephone company subsidiary of US WEST, Incorporated--one of the seven regional holding companies resulting from the divestiture of AT&T. US WEST is the principal provider of local telephone and related services in Seattle.

Of the 11 central switching offices (COs) serving Seattle, 10 are located within the city limits (see Utilities Figure A-8). For local exchange, the COs switch calls in and between the line exchange groupings (these groupings are addressed uniquely by an area code and the first three digits of a phone number). For long distance, the COs switch calls and mediate between the long-distance network and the local originating/terminating network. Due to advances in technology, additional capacity is easily and quickly added to the system.

Four main cable routes emanate from each CO, running north, south, east, and west. Connected to these main feeder routes are branch feeder routes which support thousands of local loops providing dial tone service to individual subscribers. The COs are connected by inter-exchange trunk lines that may be aerial or buried, and copper or fiber optic line.

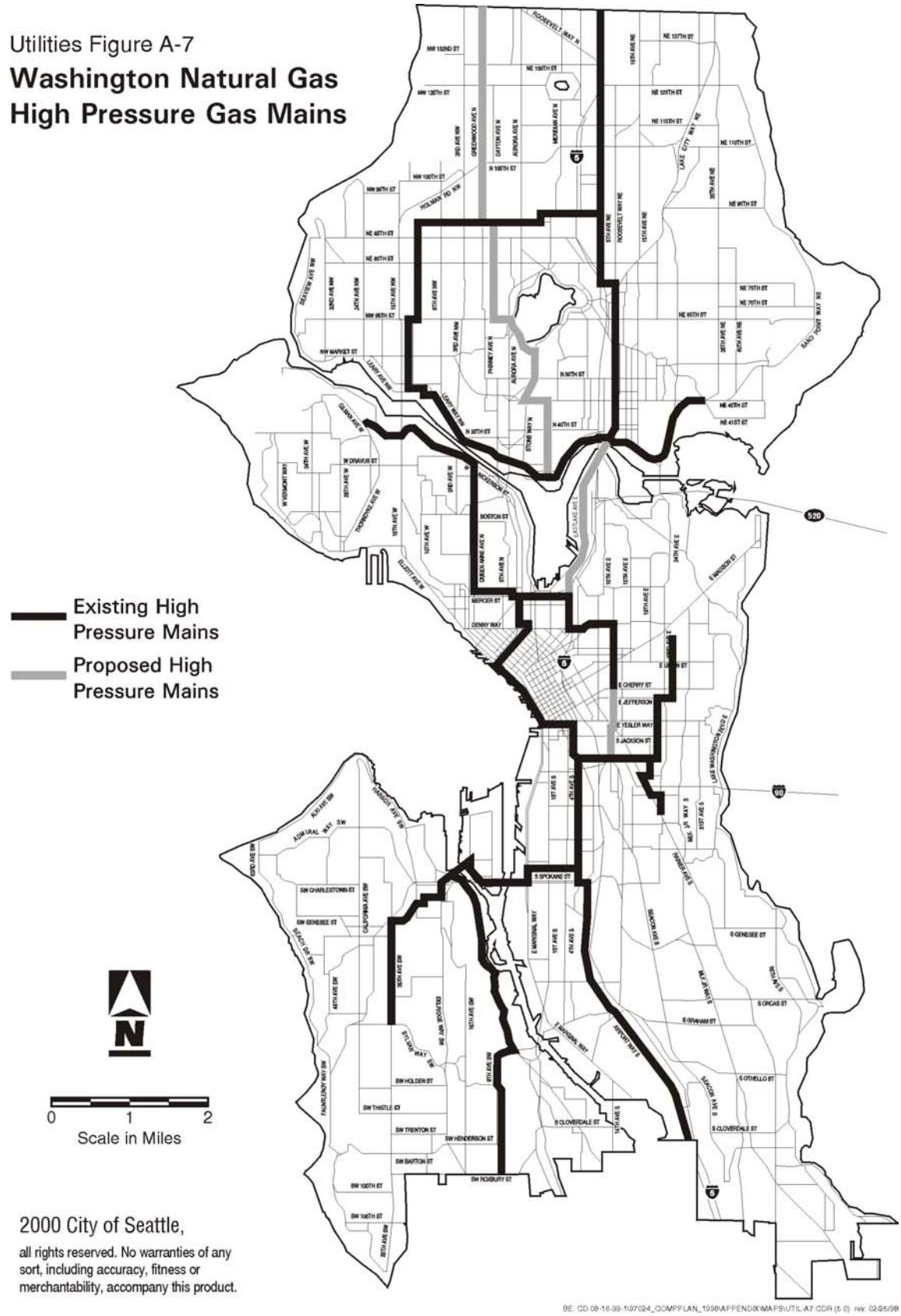
Cellular Communications

Seattle is served by two cellular telephone companies: Cellular One and US WEST/New Vector. Cellular telephones are radios which send and receive signals from low-power, ultra-high frequency antennas positioned at several cellular communication ("cell") sites. The "cellular" name is derived from the manner in which coverage is provided by the cell sites. Each cell site has a signal radius, or coverage area, of only a few miles (depending upon terrain and capacity demand for service). As a cellular telephone user passes from one cell to the next, the call is transferred to an available channel at an adjacent cell site.

Cellular One currently has 22 cell sites in Seattle and US WEST/New Vector has 16 cell sites (see Utilities Figures A-9 and A-10). The cell sites are linked to a Mobile Telephone Switching Office which ties the cellular network into the conventional telephone system.

Utilities Figure A-7

Washington Natural Gas High Pressure Gas Mains



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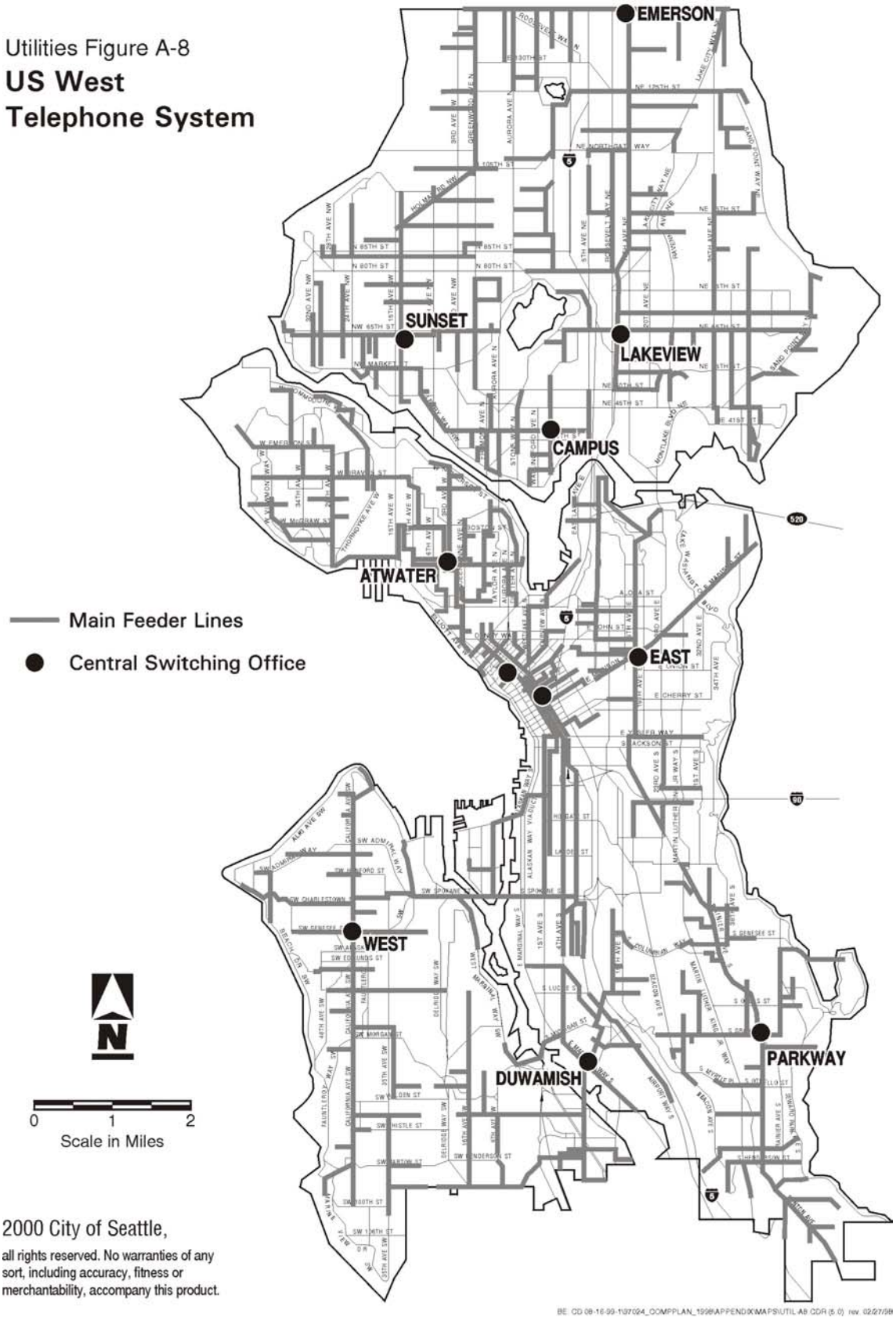
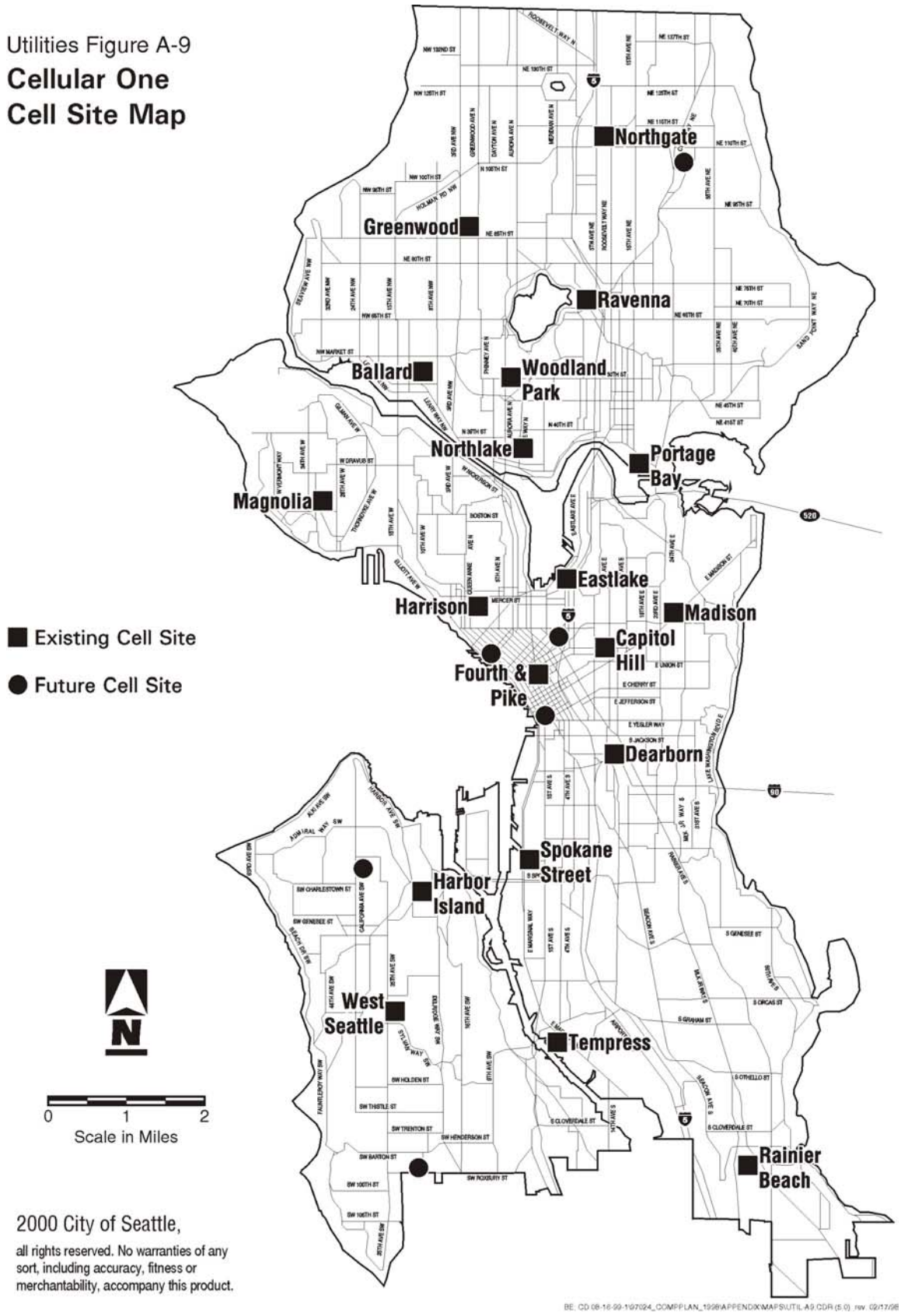
Utilities Figure A-8

US West Telephone System



Utilities Figure A-9

Cellular One Cell Site Map



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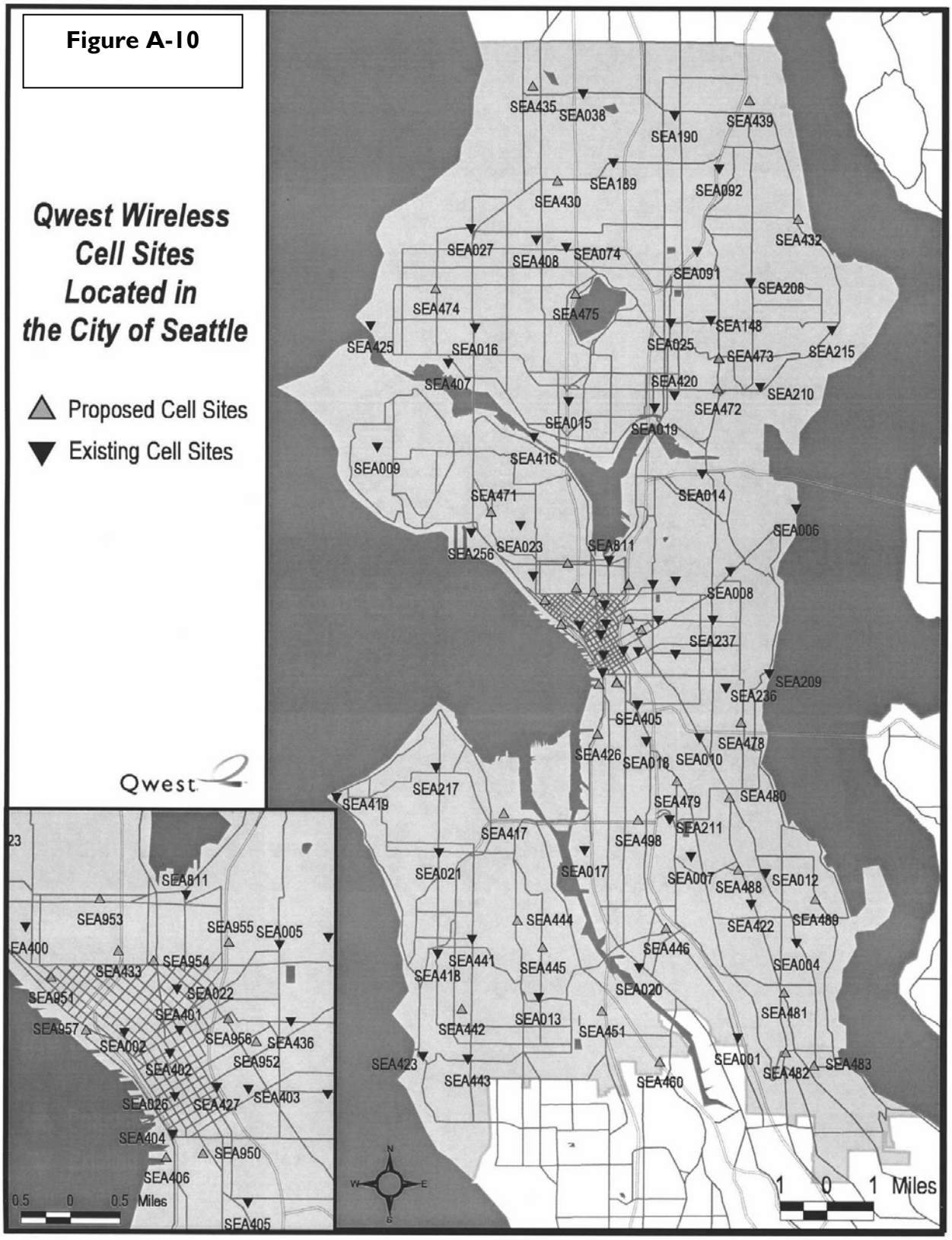


Figure A-10
Qwest Wireless Cell Sites Located in the City of Seattle
Proposed Cell Sites
Existing Cell Sites
Qwest
SEA435
SEA038
SEA439
SEA190
SEA189
SEA092
SEA430
SEA432
SEA027
SEA408
SEA074
SEA091
SEA208
SEA474
SEA475
SEA148
SEA425
SEA016
SEA025
SEA473
SEA215
SEA407
SEA420
SEA210
SEA472
SEA015
SEA019
SEA009
SEA416
SEA471
SEA014
SEA006
SEA256
SEA023
SEA811
SEA008
SEA237
SEA209
SEA236
SEA405
SEA478
SEA426
SEA018
SEA010
SEA217
SEA419
SEA479
SEA480
SEA417
SEA498
SEA211
SEA021
SEA017
SEA007
SEA488
SEA012
SEA444
SEA422
SEA489
SEA446
SEA441
SEA445
SEA004
SEA418
SEA020
SEA481
SEA013
SEA442
SEA451
SEA423
SEA001
SEA483
SEA443
SEA460
SEA482
1 0 1 Miles
SEA811
SEA953
SEA955
SEA005
SEA400
SEA954
SEA433
SEA951
SEA022
SEA401
SEA957
SEA956
SEA436
SEA002
SEA952
SEA402
SEA026
SEA427
SEA403
SEA404
SEA950
SEA406
0.5 0 0.5 Miles
SEA405

Cable Television

Three cable communications companies hold City franchises for serving Seattle residents--Viacom Cablevision, TCI Cablevision of Washington, Inc., and Summit Cablevision. The City has begun a franchise renewal process with Viacom and TCI involving negotiations over future capacity, number of channels, construction schedules, and other criteria. The Summit franchise expires in February 1998. (See Utilities Figure A-11).

One of the primary components of a cable system is the head-end site--an electronic control center where the information signal is processed for distribution through the cable system. This signal can be received off a hard line (cable), a satellite dish, microwave antennae, and/or a TV antenna. Viacom has three head-end sites in Seattle and 545 miles of distribution lines serving 55,374 households. TCI has one head-end site in Seattle, along with 541 miles of coaxial cable plant and 21 miles of fiber-optic cable serving 76,054 households. Summit has one receive site/head-end site in Seattle, along with 110 miles of coaxial cable and 15 miles of fiber-optic cable serving 9,200 households.

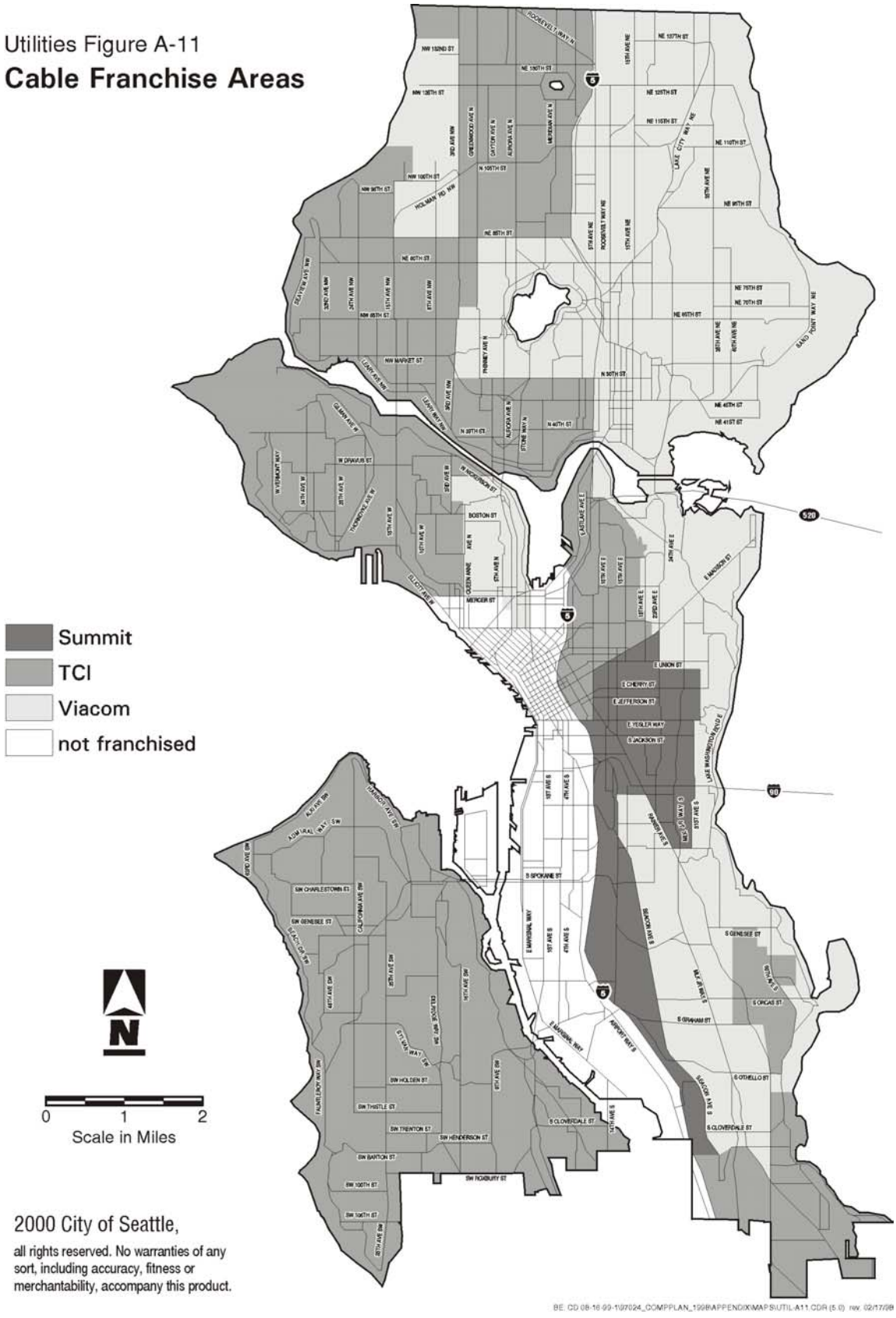
Seattle Steam

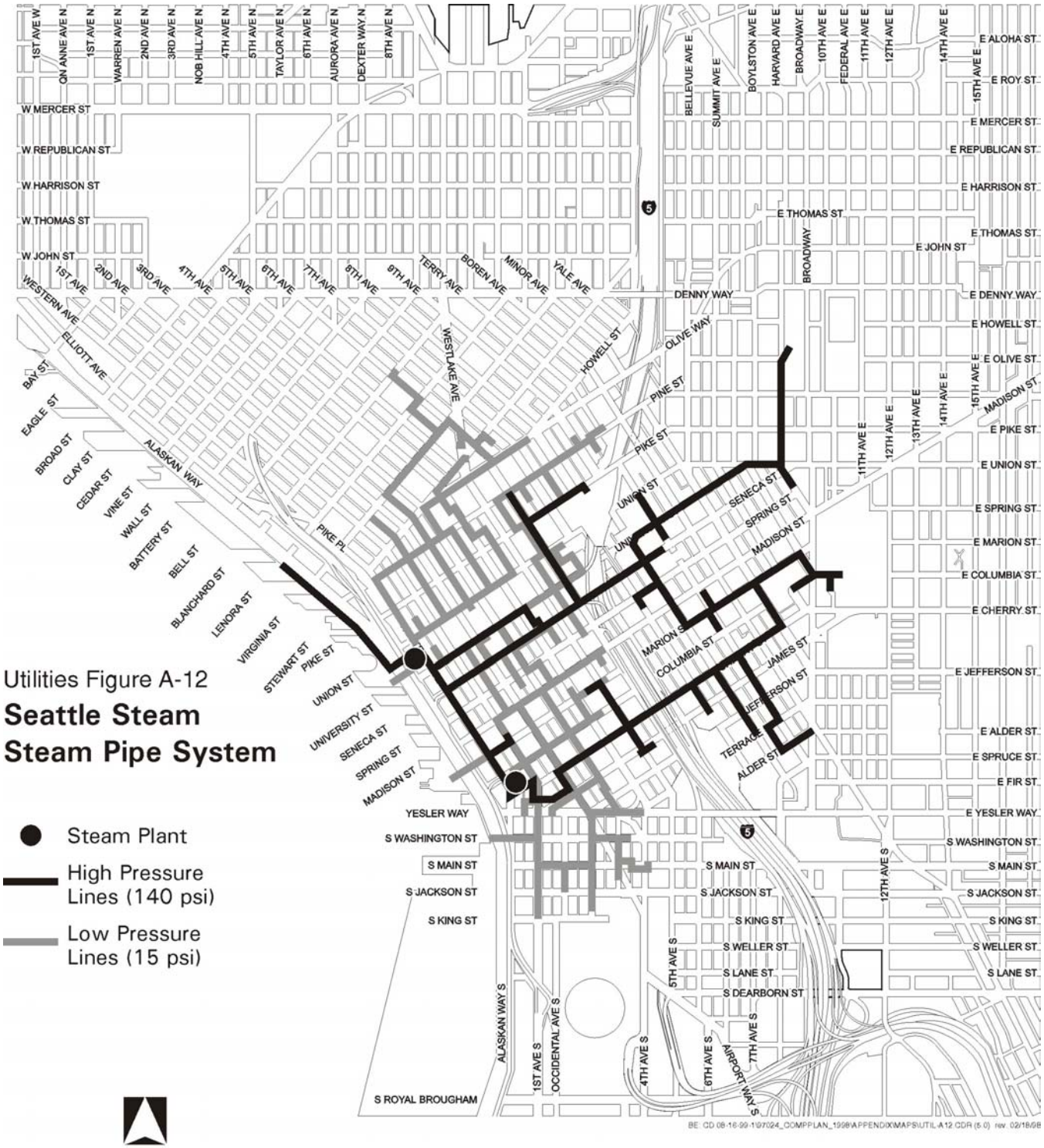
Seattle Steam is a district heating utility franchised by the City. Its service area encompasses roughly a square-mile area of the Central Business District, extending from Blanchard Street to King Street and from the waterfront to 14th Avenue, crossing over First Hill (see Utilities Figure A-12). The company provides steam to commercial, residential, and institutional customers for space and hot water heating, along with other uses.

Two steam-generating plants supply the network. The primary plant is located on Western Avenue at University Street. The secondary plant is located on Western Avenue near Yesler Way--the site of the original plant built in 1893. Total steam generation capacity is 850,000 pounds per hour, with boilers designed to burn either natural gas or residual oil. The network of insulated steel pipe encompasses a total length of over 18 miles beneath city streets and currently serves 240 customers.

Utilities Figure A-11

Cable Franchise Areas




1ST AVE W
QN ANNE AVE N
1ST AVE N
WARREN AVE N
2ND AVE N
3RD AVE N
NOB HILL AVE N
4TH AVE N
5TH AVE N
TAYLOR AVE N
6TH AVE N
AURORA AVE N
DEXTER WAY N
8TH AVE N
BELLEVUE AVE E
SUMMIT AVE E
BOYLSTON AVE E
HARVARD AVE E
BROADWAY E
10TH AVE E
FEDERAL AVE E
11TH AVE E
12TH AVE E
14TH AVE E
15TH AVE E
E ALOHA ST
E ROY ST
E MERCER ST
E REPUBLICAN ST
E HARRISON ST
E THOMAS ST
E JOHN ST
E DENNY WAY
E HOWELL ST
E OLIVE ST
E PIKE ST
E UNION ST
E SPRING ST
E MARION ST
E COLUMBIA ST
E CHERRY ST
E JEFFERSON ST
E ALDER ST
E SPRUCE ST
E FIR ST
E YESLER WAY
S WASHINGTON ST
S MAIN ST
S JACKSON ST
S KING ST
S WELLER ST
S LANE ST
W MERCER ST
W REPUBLICAN ST
W HARRISON ST
W THOMAS ST
W JOHN ST
1ST AVE
2ND AVE
3RD AVE
4TH AVE
5TH AVE
6TH AVE
7TH AVE
8TH AVE
9TH AVE
TERRY AVE
BOREN AVE
MINOR AVE
YALE AVE
DENNY WAY
OLIVE WAY
PINE ST
PIKE ST
UNION ST
SENECA ST
SPRING ST
MADISON ST
MARION ST
COLUMBIA ST
JAMES ST
JEFFERSON ST
TERRACE ST
ALDER ST
WESTERN AVE
ELLIOTT AVE
BAY ST
EAGLE ST
BROAD ST
CLAY ST
CEDAR ST
VINE ST
WALL ST
BATTERY ST
BELL ST
BLANCHARD ST
LENORA ST
VIRGINIA ST
STEWART ST
PIKE PL
UNIVERSITY ST
WESTLAKE AVE
HOWELL ST
ALASKAN WAY
BROADWAY
E THOMAS ST
E JOHN ST
11TH AVE E
12TH AVE E
13TH AVE E
14TH AVE E
15TH AVE E
MADISON ST
YESLER WAY
S WASHINGTON ST
S MAIN ST
S JACKSON ST
S KING ST
S WELLER ST
S LANE ST
S DEARBORN ST
12TH AVE S
5TH AVE S
4TH AVE S
6TH AVE S
7TH AVE S
1ST AVE S
OCCIDENTAL AVE S
ALASKAN WAY S
AIRPORT WAY S
S ROYAL BROUGHAM
5
Utilities Figure A-12
Seattle Steam
Steam Pipe System
Steam Plant
High Pressure Lines (140 psi)
Low Pressure Lines (15 psi)
N
0 4 8 12
Scale in 100 Feet
2000 City of Seattle,
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